299-E33-74 (A6882)

Log Data Report

Borehole Information:

Borehole:	299-E33-74 (A6882)		Site:	216-B-8 Crib	
Coordinates (Plant)		GWL[1] (ft):	n/a[2]	GWL Date:	
North	East	Drill Date	TOC[3] Elevation	Total Depth (ft)	Type
573810	137503	01/01/48	629.92 ft	150	

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Welded steel	2.36	8 5/8	8 est.	5/16	0	145?

Borehole Notes:

The logging engineer measured the casing stickup, diameter, and thickness at the borehole using a steel tape and calipers. The stickup was measured at the survey point or top of casing. Zero reference is the top of casing.

Logging Equipment Information:

Logging System:	Gamma 2B		Type: SGLS HPGe (35%)
Calibration Date:	09/00	Calibration Reference:	GJO-2001-245-TAR
		Logging Procedure:	MAC-HGLP 1.6.5

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2	3	4	5	6
Date	8/28/01	8/29/01	9/7/01	9/7/01		
Logging Engineer	Musial	Musial	Spatz	Spatz		
Start Depth (ft)	2.5	100.5	145.5	100.0		
Finish Depth (ft)	101.5	13.0	100.0	85.0		
Count Time (sec)	100	100	100	100		
Live/Real	R	R	R	R		
Shield (Y/N)	n/a	n/a	n/a	n/a		
MSA Interval (ft)	0.5	0.5	0.5	0.5		
ft/min	n/a	n/a	n/a	n/a		
Pre-Verification	B0040CAB	B0041CAB	B0045CAB	B0045CAB		
Start File	B0040000	B0041000	B0045000	B0045092		
Finish File	B0040198	B0041013	B0045091	B0045122		
Post-Verification	B0040CAA	None	B0045CAA	B0045CAA		
Depth Return Error	1.0 ft	Unknown	n/a	-0.03 ft		

Logging Operation Notes:

Zero reference is the top of casing. Files B0040CAB, B0041CAB, and B0045CAB were evaluated in the field and passed verification criteria. No fine gain adjustments were made while logging this borehole. The depth return error on logging run 1 was about 1 ft.

Analysis Notes:

Analyst:	Sobczyk	**Date:**	09/12/01	**Reference:**	MAC-VZCP 1.7.9 Rev. 2

The pre-run and post-run verification spectra were evaluated, and all were found to be within acceptance criteria. Individual spectra were processed in batch mode using APTEC Supervisor. Concentrations were calculated in EXCEL, using parameters determined from analysis of calibration data collected in August 2000. The casing configuration was assumed to be one string of 8-in. casing with a thickness of 5/16 in. These assumptions are consistent with the measurements taken by the logging engineer. Zero reference is the top of the casing. Water and dead time corrections were not needed.

A repeat log plot is also shown. The repeat plot indicates good agreement between successive log runs. This demonstrates good repeatability in both depth and radionuclide measurement.

Log Plot Notes:

Separate log plots are provided for gross gamma and dead time, naturally occurring radionuclides (^{40}K, ^{238}U, and ^{232}Th), and ^{137}Cs. For each radionuclide, the energy value of the spectral peak used for quantification is indicated. Unless otherwise noted, all radionuclides are plotted in picocuries per gram (pCi/g). The open circles indicate the minimum detectable level (MDL) for each radionuclide. Error bars on each plot represent error associated with counting statistics only and do not include errors associated with the inverse efficiency function, dead time correction, or casing correction. These errors are discussed in the calibration report. A combination plot is also included to facilitate correlation.

Results and Interpretations:

^{137}Cs, which is a man-made radionuclide, was detected in this borehole. ^{137}Cs occurred between 2.5 and 6.0 ft at concentrations ranging from 0.3 pCi/g at 6.0 ft to 218 pCi/g at 3.5 ft. The high total gamma activity near the ground surface is attributed to ^{137}Cs activity. At ground surface (log depth 2.5 ft), ^{137}Cs was observed with an activity of 33 pCi/g. In addition, ^{137}Cs was observed at 145.5 ft with an activity of 0.3 pCi/g.

The increase in gross gamma counts from about 135 cps to about 170 cps at a log depth of about 24 ft corresponds with an increase in apparent ^{40}K activity from about 13 to 17 pCi/g. This increase in total gamma is interpreted as the Hanford H2.

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[1] GWL – groundwater level
[2] n/a – not applicable
[3] TOC – top of casing

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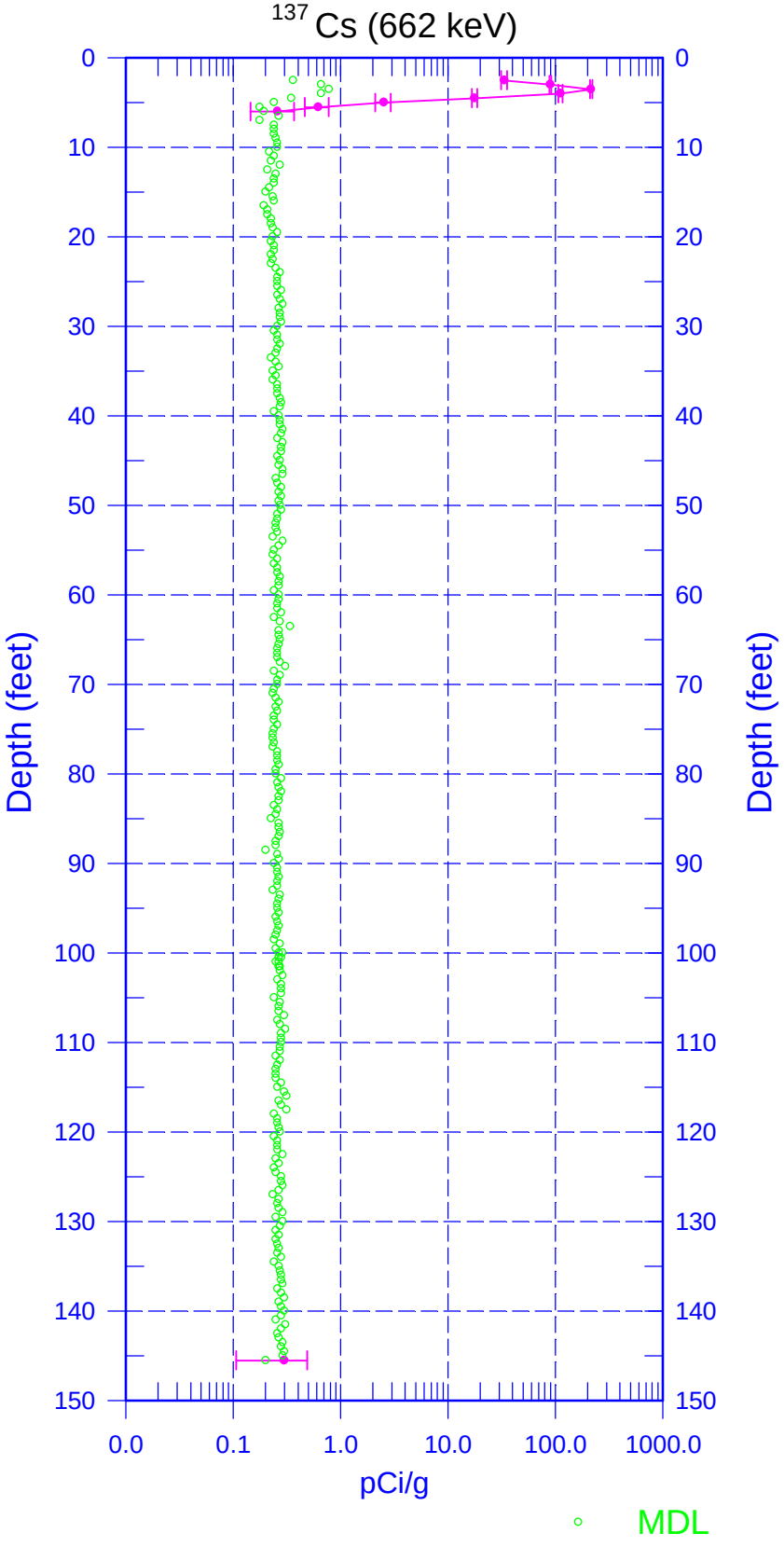
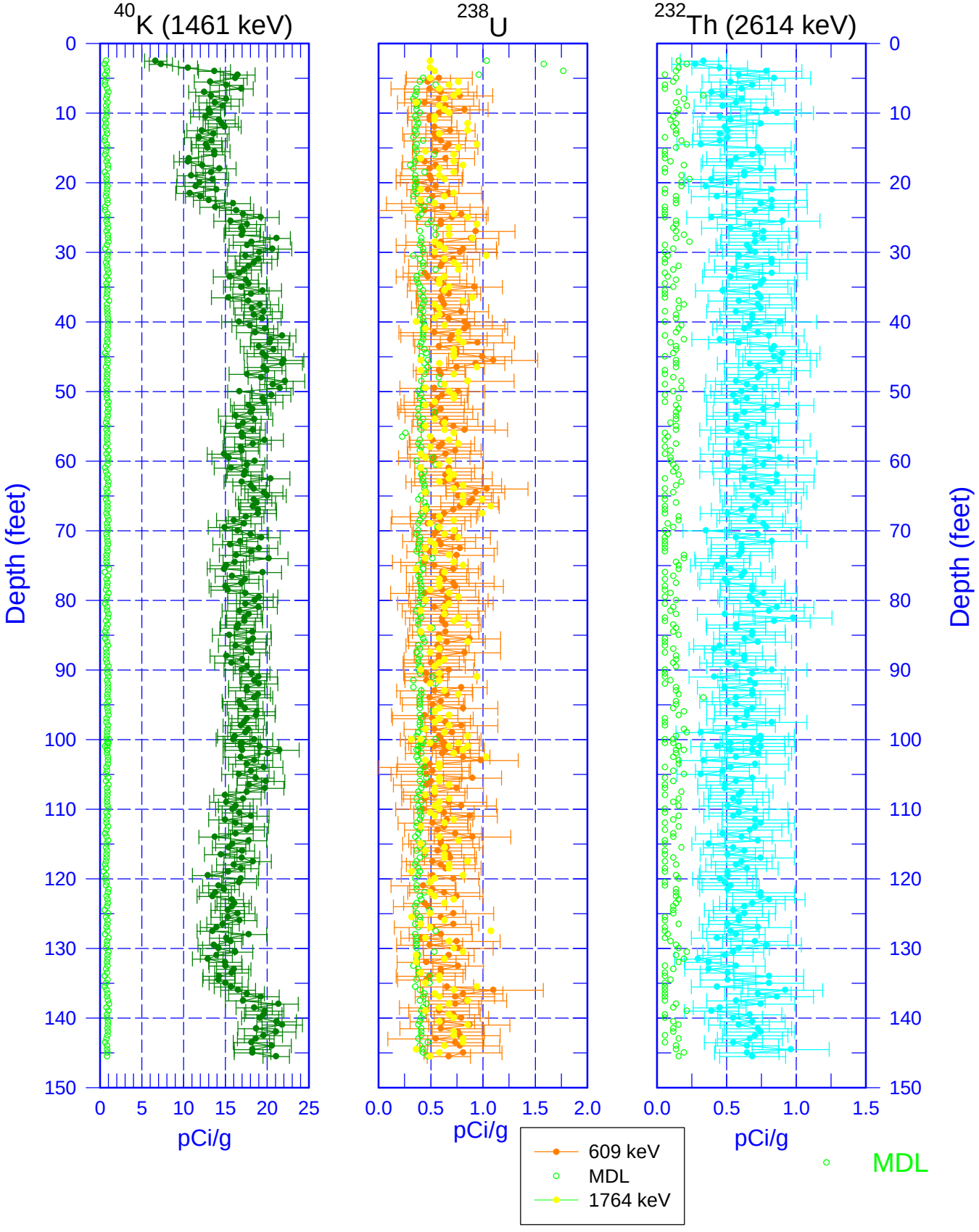
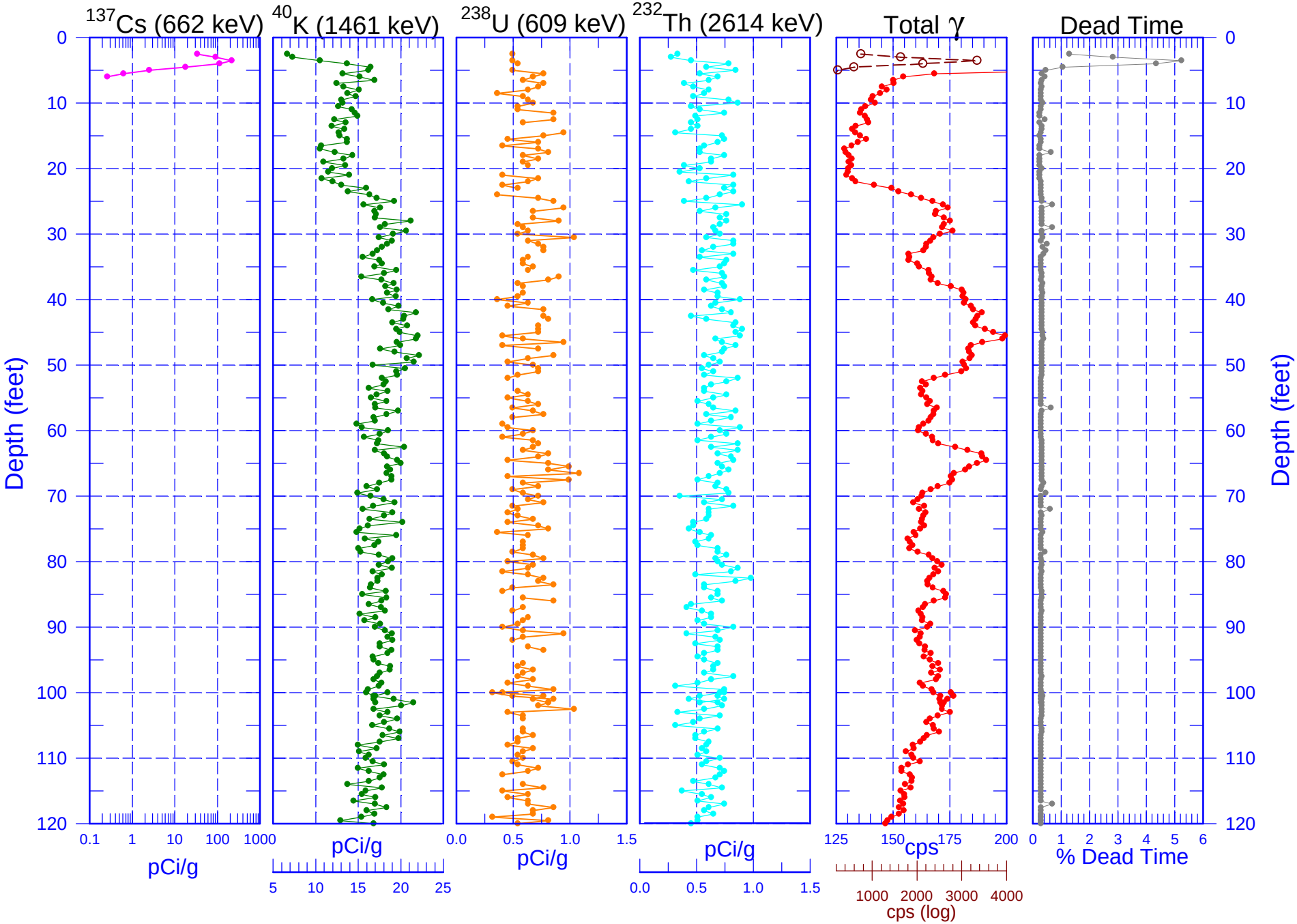
Man-Made Radionuclide Concentrations



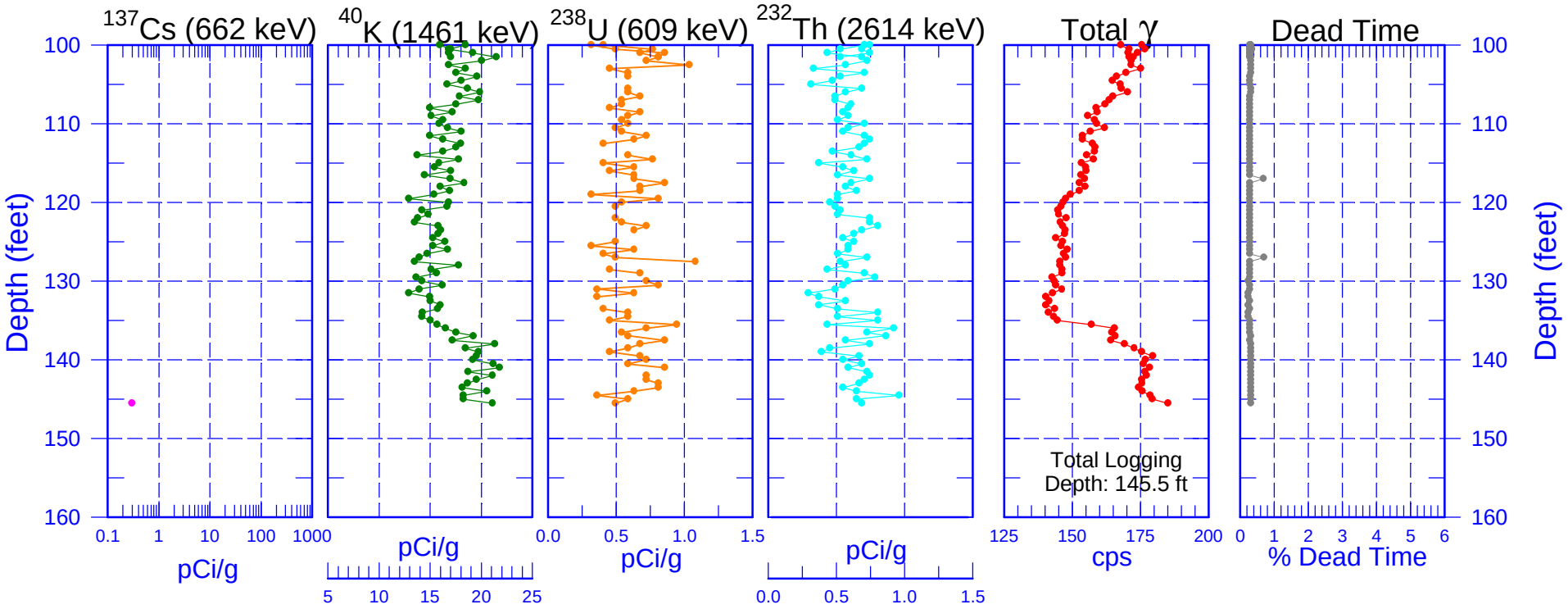
299-E33-74 (A6882)
Natural Gamma Logs



299-E33-74 (A6882) Combination Plot



299-E33-74 (A6882)
Combination Plot



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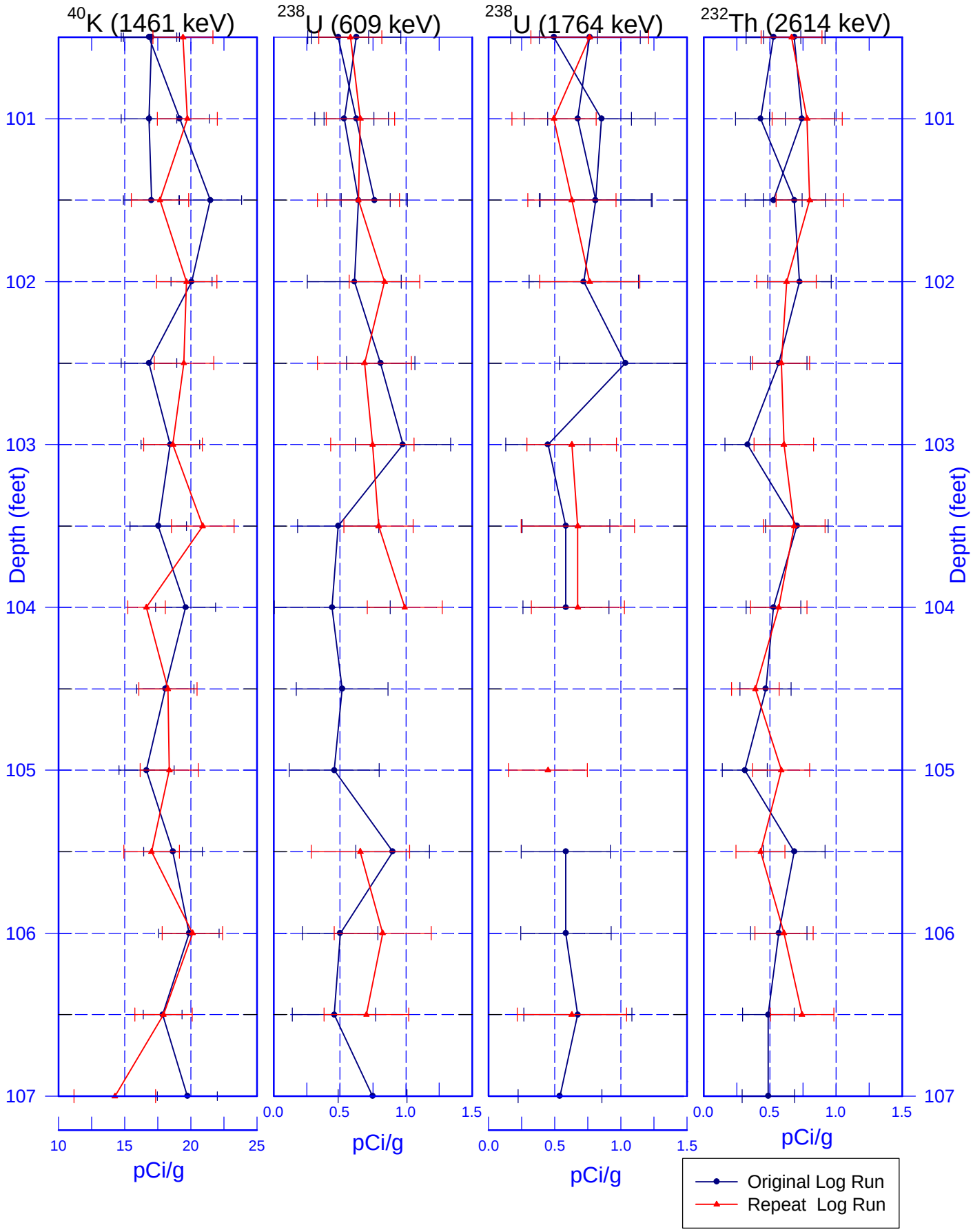
First Rerun of Natural Gamma Logs



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